



RECEIVED

MAY 03 2002

SEQUENCE LISTING

TECH CENTER 1600/2900

Gurney, Mark E.
Abraham, Irene

<120> Transgenic Mouse Model Of Human Neurodegenerative Disease
<130> PHRM0303 (6225)
<140> 09/767,088
<141> 2001-01-22
<150> 60/177,319
<151> 2000-01-21
<160> 16
<170> PatentIn version 3.1
<210> 1
<211> 1152
<212> DNA
<213> Homo sapiens

<400> 1
atggctgagc cccgccagga gttcgaagtg atggaagatc acgctgggac gtacggggtg 60
ggggacagga aagatcaggg gggctacacc atgcaccaag accaagaggg tgacacggac 120
gctggcctga aagctgaaga agcaggcatt ggagacaccc ccagcctgga agacgaagct 180
gctggtcacg tgaccaagc tgcgatggtc agtaaaagca aagacgggac tgggaagcgat 240
gacaaaaaag ccaagggggc tgatggtaaa acgaagatcg ccacaccgag gggagcagcc 300
cctccaggcc agaagggccca ggccaacgcc accaggattc cagcaaaaac cccgcccgct 360
ccaaagacac caccagctc tgggtgaacct ccaaaatcag gggatcgag cggtacagc 420
agccccggct cccagggcac tcccggcagc cgctcccgca ccccgctcct tccaaccca 480
cccacccggg agcccaagaa ggtggcagtg gtccgtactc caccaagtc gccgtcttcc 540
gccaagagcc gcctgcagac agccccctg cccatgccag acctgaagaa tgtcaagtcc 600
aagatcggct cactgagaa cctgaagcac cagccgggag gcgggaaggt gcagataatt 660
aataagaagc tggatcttag caacgtccag tccaagtgtg gctcaaagga taatatcaaa 720
cacgtcccgg gaggcggcag tgtgcaaata gtctacaaac cagttgacct gagcaaggtg 780
acctccaagt gtggctcatt aggcaacatc catcataaac caggaggtgg ccaggtggaa 840
gtaaaatctg agaagcttga cttcaaggac agagtccagt cgaagattgg gtccctggac 900
aatatcacc acgtccctgg cggaggaaat aaaaagattg aaaccacaa gctgaccttc 960
cgcgagaacg ccaaagccaa gacagaccac ggggaggaga tcgtgtacaa gtgccagtg 1020
gtgtctgggg acacgtctcc acggcatctc agcaatgtct cctccaccgg cagcatcgac 1080
atggtagact cgccccagct cgccacgcta gctgacgagg tgtctgcctc cctggccaag 1140
cagggtttgt ga 1152

<210> 2
<211> 9990
<212> DNA
<213> Mus musculus

B
2

<400> 2

ggcgccgcg acggatccaa aggcagcaaa aaggcagaga gggtgatact gggcctggct	60
taagcatttg aaacttcaaa gctcaccccc aattacacac ttcttccaac aagtccacac	120
ctcctaatta gtgccactct ctgtgggcct acggagagta ttttcattct aactaccaca	180
gttgctgagg aatttaatta aaactacaac cttatcccaa cctagatctt tcagcctttc	240
tgtactacca gagaggggtc atacagcatt gttgtgactc ccattataac ttaaagggaa	300
gctcacacaa agtccagagc cctccatacc ctgcaaatga agaagtacgt tctcaaattc	360
cttgagcag gggcccaact tgggcgacaca aactttaatt tctagacgga acggcatctc	420
tacagaaaga aaagccatgg tatctgcatg ataagtctga aaaggacctg ggcaaatctg	480
cagctgacaa ttccagccat tgctgccact gcgagaaaac cctgctgatg gcagcattgt	540
cagcatcatc tcctccagga acaccggcca tcgagccacg aggacaattg ctgctgctgg	600
agtcaattca tctgccagcc acatcatact ctgggaccgt cactaaccag atccaagcag	660
ccttgaggaa gcatgtcttc tgggtgtgac tgatcccaag ggctgacaac aaggctctca	720
cagaggcatc ttatgtcaac ctatctacca tgcacggtat aagacacatt ctctctgtg	780
ctgtgtggac actgccatca cacgcaacag aaaggaaact cactcactgt gtctgatgtg	840
gtggtgcttg ttaggggagt tctgggcatg tatggcacca tcgcccatga ggactctgt	900
ggggtcatgc ccactctact cctctagaga ccatgaagag atggagaggg aagagcaagc	960
acagatgaca ggctagaact aaagaggagt gtcaggtgag cggacctgaa ctcacggctg	1020
ctcagcctga agtggtgtgg ccatctgcat ctggtatctg gtctgaaggt gcgtggatac	1080
cctctgtgcc cgtccagaag tttcctactg aagacagaaa tgcctgtcca gtcattggaag	1140
aatgattggc agttcccaact tctcagacca ctgaatgggt cagaacaact actgggtgac	1200
cctaaggat tcttcagcag atatgtgtga aaaatggaaa gaagatgggt agaaataaac	1260
ggtttttagag gaaaaaact ctcacaaaaga tattataaaa agaaaagagc tttattattg	1320
agcaagcatt caaccagaat gcacaccaca ggcagctctgc taagggagtg tgcagacagg	1380
aggagtgtcg ccctttatgt gagccagtag ataaggatgc tgtgcgtgtt tttagtaact	1440
ggtcttcagc ttgacagcac cttttatcac atggtttaac cttaaattcat ctggcgaaatg	1500
aggctgtcac gtacttcctg attagcttta tctgaaatga gacaagcttc acatgttcac	1560
ggcaggagggt aatcctgctg cttagagaac aggggtccatc caagccaggc tccttctccc	1620
accaacacgg gtggttgaag agctatctct ccctggtgtg tgtgtttcag agatggctcc	1680
caggtttttg gtttggtttg aattgggttt tggttttctt actctagccc agactagctt	1740
ggaattctct ggaaagctgc aacggggagc tcaggttcag tgagagatcc tgtctcaaaa	1800
agcagggtga gaagtgattg aggaagacac ccagtggtta acctctgacc tccatatgtg	1860
catgcatgga cacgcatgga tacacatata cacacacaca cacacacaca cacacacaca	1920
cacacacaca cacacacaaa accagaaaaga atgaacgccc ccctcccagc ttgtttacag	1980
tagatacaga gcactcgtaa aacatggggt gtaaactgaa tgctgagagt aacttagatg	2040
agtaattaag gaaggaagag gaaagaaacc aggaaaccga gagcaagtga ctggaagatc	2100

gttaggcaat ctccacaccc tgctcgttga agttggaatg ctttcttctt ctgcctcttg 2160
 aagttcttta gaagtgctag gatttcacaa ttagtctgtg gtggtttcaa tatgcttcac 2220
 ccgtggtaag tggcactatt aggaaacgtg tccttggtga aggaaggggtg tcaactgcata 2280
 ggcgggcttt gaggtgtctt ccagtgtca agctcctccc agtgcaagag aggcagacac 2340
 ctgttgcttg cagaagacag tctcctgtg cctttgaatc aagatgtaga actcaagccc 2400
 catgtctgcc tgaacctctg aaactgtaag ccagcccaa ttaaagtgtt tctttcacaa 2460
 gagttgcctt ggtcatggtg tctgttcaca gcaataaaac cctaactaag acagtcttaa 2520
 atcaatgaaa agaccttaa ttattcattg aacaaacacc attttcttgt atcaagttgg 2580
 cagtactag taagcaacta tagttctgca ccaggacact ttttgagaa atataccgat 2640
 ccaagcatgt tggcatctag attccaaagc caagacacct gccacacct tccatgcctt 2700
 gggttcctgg cagggcatct ggcttcgggg atgtgtattc caggcaccca ctggaatgca 2760
 tggaaacaat taaaatagca tcatagaaga cattgcaatc ctaggagaa actataccaa 2820
 aactcagaac tatacctggg taagtgtaga aaagacgaaa ggaataaaac caggaatatt 2880
 ttaaaatatt tttattgagc tcatgtgcat gggatatttg cctgaaagta tgtctgtgta 2940
 ccacatgcat ggctggctcc tgcagaggcc aaaagagagc atcagatctc ctagagctgg 3000
 agtttcagaa gtttgtgagc taccacatgg gtgctggaac caaaaccag gacatctgga 3060
 agagcagcca gtgttcttaa ctactgagcc atcactcagg tcccaccatg aatgtttttc 3120
 tttattcttc tctatatttt ctaatgtttt tattggaaat atacaacttt tgccacacat 3180
 aacaaatgac caaagaaatg aggtgagagg ggcagctgtt caaatgctgc ctgggaaggc 3240
 ttggccagcc ctggcttggc tgccctggc tcagctggcc ctgacttggc tgtcccgggtg 3300
 ccagctgtca tctactgctt cataataagc tgcactttgg gctgaagggg tggctcagcc 3360
 tttaaaggct aggtcataa ccaaagtaag ttgcatttta tttgactag gttgaagggg 3420
 gatctgaaac ttgctgtcaa tgttataaaa ctttttatct tcaaatttgg tataggggtc 3480
 atagaccaa ggttctataa accccagAAC agcaccactc cctagaaata agcaccata 3540
 caagagccta tgggacactt tatagccaaa caaaaagcta tgtttgaaac ttcctttaca 3600
 agggcctgag tcccattcat aagggaagga gcccacttc gtaataacac cccactgggtg 3660
 acatttgaag gggacacatt caaactgtaa caccatctta tatcatttgc acattaggggt 3720
 caaactgtgc cacgttgtca tttctaagaa gacagaagtt gtcaagcctg tgctttgagc 3780
 cacaagtgtg acaacctact ttcaggcaag tcgtacttc cctaagactc taccccaata 3840
 ggcctgggggt ctggaatgtg tttaacacag atgcaggctt ctgccttagt gcaggcttga 3900
 gttctcatgt cctctctctt ttagctttcc gtctcaaggc gcctctcctt agcagaaaaa 3960
 atcagaggca taaagcatac atcaggggga agccagagtt ttcagaggga gttttgtgat 4020
 ggccttttca gagcattctt gtcaagacta gtttgccctg ttctctttat taaatgaaag 4080
 aaaaataatg cagtgttgca aattagcttt ggtaatggct ccaaccattg tcaggttcac 4140
 agtctcatte cgccattcaa aacaacaaac ccaccacact ctctatgcag tgccgtaact 4200
 cagaacagcc accaaacagc agaaagaggc tccccgactc ctctcagcct tgccataaac 4260

tcgccggcca	catgcttatt	ttaaattatt	taaattatgt	cgtttctccc	aacaatgacc	4320
tcccaagtgc	ttggttgaca	ggcttatacc	attaagccga	ggcttgcata	gcaacgataa	4380
ccaggtaggc	tattattata	accaggtagc	tgccgagcta	ctggtcggtc	cccttttgtc	4440
tctagaaacc	tctcaacccc	cacccaaaaa	agcttttatt	gccacttcct	agtgggtaga	4500
gagcagtcag	ccaatagata	tttgattctt	tgaggaaaaa	gctgagtttt	gatgtctttt	4560
aatcaagcct	ttcagagtec	ctctgtgggg	gaggccaggt	ggaagcgggg	tgggaagctg	4620
gtcccttacc	taagctaata	tagacaccct	cccactcctc	ccctgccctc	ttgacagatg	4680
cagtcatcct	gatcacaatg	agtattctct	gaggcaggaa	ggcaaggctc	tgggaagatgg	4740
tcaatgcctt	cattaagaac	ccagagtaaa	ggtcaagcag	acaccagcac	cgctgaaatc	4800
taatttcact	gtaattgaat	catctcagcc	aaaggctgta	ttttccagcc	ctctcgtggc	4860
ctcttcccca	acaactgtca	acaactgtgt	gagcctaccc	atgtatgcgc	gctcacacac	4920
acacacacac	acacacacac	acacacacac	aggggtggggg	gacacaatga	ttacacaaga	4980
gtacttaata	aacaactata	attctcctgg	ctcgatagtg	tccttaccac	cctctcctcc	5040
tggatccgga	tcctaatact	ggatacaaat	atttaatcca	aaccaatct	tgtgtctgtt	5100
aatgatcttc	agtgtctcgc	cctcagcaag	aggacaggat	attatgtttt	ccctgtgatt	5160
tatgacctct	tctgtctcag	tatcggcagc	aatttattta	catggctttg	gagtgtgtta	5220
tatgtgtagt	atggacatga	gggtgcattg	caacctatgt	gtggaggcca	gaggtcaatg	5280
tcattgtctc	cccaatcact	gccagtggtg	ccctggattc	caaactcagg	tcctcacgct	5340
tgggaactga	gccagtgcgc	cagctcctaa	ccctcccctg	ttttaaaaag	gtctcattat	5400
gtgcccagg	tcagccttga	acttgagagt	ctcctgactg	caggctttca	cctgtccaag	5460
tcagcaggca	tcttgaacaa	gaacatcatt	tcctttaagc	tgtttcaggc	tgtgtttggt	5520
gggagctggt	aaatgcagtg	cattttttcc	tttggaacaa	ataaaagaaa	aaagtgatta	5580
aatgagttgg	gtgtggtggt	gcgagcttac	aatcctagaa	ctcaggagat	tgagggagaa	5640
gcattgctct	gagtttgagg	tcagcttaaa	ttacttagta	ggaacaccag	gccaaattgg	5700
gctatgggat	tgtctccaaa	gataaagaaa	aaagggaagg	agagaaaaga	aaaagaaagg	5760
aaagaagggg	aaaagaagga	atcagcagag	aataaataag	tcaacatgca	atggccaata	5820
tactttctag	gcctctaatt	cttttatagt	ttgtgggaaa	atgtcgaaaa	tcttcgttac	5880
caatttcttg	ttaccaaagt	tcaacgatgg	cttcctcgct	ccgttaggta	acctttcatt	5940
ttctcaacta	cccattatgt	aacgggagca	ttgggtactg	gatcagtcct	ccattaaaga	6000
tgatttttat	agttgctgag	cgctcgcagg	gagtgcctgac	actgggggcy	gtttaaacag	6060
atacaagcat	ttaagccagt	ccggagcggg	gactcatccc	ccccaccccc	cacccccccg	6120
cgagagacgc	ggcgcggcca	ttggtgagca	tcacgccccg	cccctcgccc	cgcttagttc	6180
ccgcctgccc	cgcccctttc	cactcccggc	tccccgcgt	tgtcggatca	gcagaccgat	6240
tctgggcgct	gcgtcgcata	gggtggcagg	aagcgggctg	ctgaagccag	gccttggcga	6300
gcactcagcc	ttccgtcgtc	aagctcggct	cactgcgcct	ctcggggcct	tgaggccacg	6360

gggactagga ctgggactgg gactggggct gagtctggct gggaggtgac tgtacacccc 6420
 ctgctgcgcg actcctggag gaaccgaatc ccagggcagc caggccggga gccagccttt 6480
 ccttcccagag ccagattcac agctcagcat cgctggggat gggggtggca tcttttgact 6540
 gtccttggct gttttcttct ctctttgtag tagctacagc gaacataatt ttacctcggt 6600
 attccaccac agtcattact cccttgaca gtttcattct caacgtcgcc gtgcgccttc 6660
 actgccctgt ctaggcggtt tcatgattgt ctattttctt gtactttgaa taccgtgggt 6720
 taatagcagt tgcgggtgcg cagaattctc catttcctta agagaaactc ctgggagaat 6780
 gggactaaag acgtgcaaat ttaattatat cgcaaacagg aatcaaaatt ttgcattaaa 6840
 atgccaaaca tcttgaaaaa ttaactattc aatgaagaaa aggaactact ttacctacac 6900
 acacatccga gagcttcgag gaggcgaagg aaatagaaaag ctaagggatg atttgggttg 6960
 tatttgaatc tgacacaagc tttccatatt atttatagca gggactaaac gatgagtcac 7020
 tttctgaata agatgcaaat taaagcaagt ttgtttgttg tctttacatc tattaatatg 7080
 acagagacaa tggcaacagc aaccctaacc tagaggttgc ctgaaagtgt caggtttggg 7140
 aacaagtggc cctgcttaag ggctagaaaag attgctttac aaccaacaat catgacttga 7200
 cattgcctgg ggttcctttt gtctattcct tttttaaag actagtgtt attttatgtg 7260
 catgagtgtt ttgcatccac attcgctgt atacacacct ggttctgtgg aggtcaggag 7320
 aggggtgctgg atgccctggc actagagcct tggatggtta tgtgagcccc tgccacaggg 7380
 gagctcagaa ccaaatccag gtcctctgga agagcaacca gagctcttaa aacttctaag 7440
 tatccctcca tcccttttcc atcatatttg gaaaggagaa aactgctacc catgcctggc 7500
 atttatttca gagattaact gtctgtgtaa aacttgacat tgaaagtgca ctattctgtt 7560
 tccattcat acttagttga gactactgta agtcagttag ggctttttt gtttggttcc 7620
 ttggttagtt tggagtgtgt ttgtgagctc attaacaggc tttcaatatg tagctggaat 7680
 ttgctgtgta gaccagacag gcctcaaatt tgtggcaatc ctccctgcat cttcccagaa 7740
 tgccctggta caggcataaa ccaccgtgcc cagcagtaaa acaatctggt gaggtattat 7800
 tagtcgtgtg ctgtgaccca gaaacccac tcttggaat ttactgggaa ggaacaaaca 7860
 aagggttagg ggagccatat ggctgcagt tagagaaaat tagatccaac tgaaaaatca 7920
 acctaaaggt gtaaaagcca agcagttaag aaactgacaa gctcatgatg gaagccgagg 7980
 ccatcgtgaa cactcttcat tttaggcccc acgtatcact ggggacaact gagagtcaaa 8040
 gtacaggtaa ggagaccaag gcttttcagg actcaggctg tctcagtga aagcccagaa 8100
 gagcagtaat tgaaagagct cagacgatgt gtctgatctc ctctgtttgt ttgttgctgt 8160
 attatttcca ctaacttatt tgggaggaaa aaaaacagtt cacaggcttc ttttcttgaa 8220
 atactgggga ttgctgggat cgaaccagg gataggtttt tagtttctaa aataacatag 8280
 atcatgccct gtttgctttt tggaatatgt ttgcgtgcc cttattttca tgttcaaata 8340
 ctgtccatt ttgcgtgact ctttagtatt ggtttgatga tttgcatatt agattagatt 8400
 gtatttcagt tctcagactt atttatcaat tctagttttc tctttttgtt gttttaaagg 8460
 actcctgagt atatttcaga actgaaccat ttcaaccgag ctgaagcatt ctgccttcct 8520

C2
 Cert

agtggtagct cgactatcag gtgaactttg aaccaggatg gctgagcccc gccaggagtt 8580
 cgaagtgatg gaagatcacg ctgggacgta cgggttgggg gacaggaaaag atcagggggg 8640
 ctacaccatg caccaagacc aagagggtga cacggacgct ggctgaaaag ctgaagaagc 8700
 aggcattgga gacacccccca gcctggaaga cgaagctgct ggtcacgtga cccaagctcg 8760
 catggtcagt aaaagcaaag acgggactgg aagcgatgac aaaaaagcca agggggctga 8820
 tggtaaaacg aagatcgcca caccgcgggg agcagcccct ccaggccaga agggccaggc 8880
 caacgccacc aggattccag caaaaacccc gcccgctcca aagacaccac ccagctctgg 8940
 tgaacctcca aaatcagggg atcgagcgg ctacagcagc cccggctccc caggcactcc 9000
 cggcagccgc tcccgcacc cgtcccttcc aaccccacc acccgggagc ccaagaaggt 9060
 ggtagtggtc cgtactccac ccaagtcgcc gtcttccgcc aagagccgcc tgcagacagc 9120
 ccccgtagcc atgccagacc tgaagaatgt caagtccaag atcggtcca ctgagaacct 9180
 gaagcaccag cgggagggc ggaaggtgca gataattaat aagaagctgg atcttagcaa 9240
 cgtccagtcc aagtgtggct caaaggataa tatcaaacac gtcccgagg gggcagtggt 9300
 gcaaatagtc tacaaccag ttgacctgag caaggtgacc tccaagtgtg gtcattagg 9360
 caacatccat cataaaccag gaggtggcca ggtggaagta aaatctgaga agcttgactt 9420
 caaggacaga gtccagtcga agattgggtc cctggacaat atcaccacg tccctggcgg 9480
 aggaataaaa aagattgaaa ccacaaagct gaccttccgc gagaacgcca aagccaagac 9540
 agaccacggg gcggagatcg tgtacaagtc gccagtgtg tctggggaca cgtctccagc 9600
 gcatctcagc aatgtctcct ccaccggcag catcgacatg gtagactcgc ccagctcgc 9660
 cacgctagct gacgaggtgt ctgcctccct ggccaagcag ggtttgtgat caggcccctg 9720
 gggcgggtcaa taattgtgga gaggagagaa tgagagagtg tggaaaaaaa aagaataatg 9780
 acccgcccc cgccctctgc cccagctgc tcctcgagc tcgggaattc ggatccagat 9840
 cttattaaag cagaacttgt ttattgcagc ttataatggt tacaataaaa gcaatagcat 9900
 cacaaatttc acaataaag ctttttttc actgcattct agttgtggtt tgtccaaact 9960
 catcaatgta tcttatcatg tctggtcgac 9990

<210> 3
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 3
 agtaattgaa agagctcaga cgatg

25

<210> 4
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 4
tgtcaccctc ttggtcttgg tgc 23

<210> 5
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 5
gtactccacc caagtcgccg tc 22

<210> 6
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 6
gcagcagcat cgaagcttct cag 23

<210> 7
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Missense

<400> 7
gcagcagcat cgaagcttct cagattttac ttccatctgg ccacctcc 48

<210> 8
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 8
ccgccaagag ccgcctgcag 20

<210> 9
<211> 61
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 9
gcagcagcat cgaagcttct cagattttac ttccacctgg ccacctccta gtttatgatg 60

g 61

<210> 10
<211> 1152
<212> DNA
<213> Homo sapiens

<400> 10
atggctgagc cccgccagga gttcgaagtg atggaagatc acgctgggac gtacgggttg 60
ggggacagga aagatcaggg gggctacacc atgcaccaag accaagaggg tgacacggac 120
gctggcctga aagctgaaga agcaggcatt ggagacaccc ccagcctgga agacgaagct 180
gctggtcacg tgacccaagc tcgcatggtc agtaaaagca aagacgggac tggaaagcat 240
gacaaaaaag ccaagggggc tgatggtaaa acgaagatcg ccacaccgcg gggagcagcc 300
cctccaggcc agaagggcca ggccaacgcc accaggattc cagcaaaaac cccgcccgct 360
ccaaagacac caccagctc tgggtgaacct ccaaaatcag gggatcgag cggtacagc 420
agccccggct cccaggcac tcccggcagc cgctcccgca cccgctccct tccaaccca 480
cccaccggg agcccaagaa ggtggcagtg gtccgtactc caccgaagtc gccgtcttcc 540
gccaagagcc gcctgcagac agccccctg cccatgccag acctgaagaa tgtcaagtcc 600
aagatcggct ccactgagaa cctgaagcac cagccgggag gcgggaaggt gcagataatt 660
aataagaagc tggatcttag caacgtccag tccaagtgtg gctcaaagga taatatcaaa 720
cacgtcccg gaggcggcag tgtgcaaata gtctacaaac cagttgacct gagcaagggtg 780
acctccaagt gtggctcatt aggaacatc catcataaac caggaggtgg ccagatggaa 840
gtaaaatctg agaagcttga cttcaaggac agagtccagt cgaagattgg gtccctggac 900
aatatcaccc acgtccctgg cggaggaaat aaaaagattg aaaccacaa gctgaccttc 960
cgcgagaacg ccaaagccaa gacagaccac ggggcggaga tcgtgtacaa gtcgccagtg 1020
gtgtctggg acacgtctcc acggcatctc agcaatgtct cctccaccgg cagcatcgac 1080
atggtagaat cgccccagct cgccacgcta gctgacgagg tgtctgcctc cctggccaag 1140
cagggtttgt ga 1152

<210> 11
<211> 1152
<212> DNA
<213> Homo sapiens

<400> 11
atggctgagc cccgccagga gttcgaagtg atggaagatc acgctgggac gtacgggttg 60
ggggacagga aagatcaggg gggctacacc atgcaccaag accaagaggg tgacacggac 120
gctggcctga aagctgaaga agcaggcatt ggagacaccc ccagcctgga agacgaagct 180
gctggtcacg tgacccaagc tcgcatggtc agtaaaagca aagacgggac tggaaagcat 240
gacaaaaaag ccaagggggc tgatggtaaa acgaagatcg ccacaccgcg gggagcagcc 300
cctccaggcc agaagggcca ggccaacgcc accaggattc cagcaaaaac cccgcccgct 360
ccaaagacac caccagctc tgggtgaacct ccaaaatcag gggatcgag cggtacagc 420
agccccggct cccaggcac tcccggcagc cgctcccgca cccgctccct tccaaccca 480
cccaccggg agcccaagaa ggtggcagtg gtccgtactc caccgaagtc gccgtcttcc 540
gccaagagcc gcctgcagac agccccctg cccatgccag acctgaagaa tgtcaagtcc 600
aagatcggct ccactgagaa cctgaagcac cagccgggag gcgggaaggt gcagataatt 660

aataagaagc tggatcttag caacgtccag tccaagtgtg gctcaaagga taatatcaaa 720
cacgtcccgg gaggcggcag tgtgcaaata gtctacaaac cagttgacct gagcaagggtg 780
acctccaagt gtgggtcatt aggcaacatc catcataaac taggagggtgg ccagggtggaa 840
gtaaaatctg agaagcttga cttcaaggac agagtccagt cgaagattgg gtccctggac 900
aatatcaccc acgtccctgg cggaggaaat aaaaagattg aaaccacaaa gctgaccttc 960
cgcgagaacg ccaaagccaa gacagaccac ggggcggaga tcgtgtacaa gtcgccagtg 1020
gtgtctgggg acacgtctcc acggcatctc agcaatgtct cctccaccgg cagcatcgac 1080
atggtagact cgccccagct cgccacgcta gctgacgagg tgtctgcctc cctggccaag 1140
cagggtttgt ga 1152

<210> 12
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 12
gcattggaga cccccccag 19

<210> 13
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 13
gcttttactg accatgcgag c 21

<210> 14
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 14
ctggaagacg aagctgctgg tcacg 25

<210> 15
<211> 9990
<212> DNA
<213> Artificial Sequence

<220>
<223> PrP/tau transgene construct

<400> 15
ggcggccgcg acggtatcaa aggcagcaaa aaggcagaga gggtgatact gggcctggct 60
taagcatttg aaacttcaaa gctcaccccc aattacacac ttcttccaac aagtccacac 120
ctcctaatta gtgccactct ctgtgggcct acggagagta ttttcattct aactaccaca 180
gttgctgagg aatttaatta aaactacaac cttatcccaa cctagatctt tcagcctttc 240

tgtactacca gagaggggtc atacagcatt gttgtgactc ccattataac ttaaagggaa	300
gctcacacaa agtccagagc cctccatacc ctgcaaataga agaagtacgt tctcaaatacc	360
cttgagcag ggcacctt tggcggcaca aactttaatt tctagacgga acggcatctc	420
tacagaaaga aaagccatgg tatctgcatg ataagtctga aaaggacctg ggcaaatactg	480
cagctgacaa ttccagccat tgctgccact gcgagaaaac cctgctgatg gcagcattgt	540
cagcatcatc tcctccagga acaccggcca tcgagccacg aggacaattg ctgctgctgg	600
agtcaattca tctgccagcc acatcatact ctgggaccgt cactaaccag atccaagcag	660
ccttgaggaa gcatgtcttc tgggtgtgac tgatcccaag ggctgacaac aaggctctca	720
cagaggcatc ttatgtcaac ctatctacca tgcacggtat aagacacatt ctctctgtg	780
ctgtgtggac actgccatca cacgcaacag aaaggaaact cactcactgt gtctgatgtg	840
gtggtgcttg ttaggggagt tctgggcatg tatggcacca tcgcccatga ggactcctgt	900
ggggtcatgc ccactctact cctctagaga ccatgaagag atggagaggg aagagcaagc	960
acagatgaca ggctagaact aaagaggagt gtcaggtgag cggacctgaa ctcacggctg	1020
ctcagcctga agtgggtgtg ccatctgcat ctggtatctg gtctgaaggt gcgtggatac	1080
cctctgtgcc cgtccagaag tttcctactg aagacagaaa tgctgtcca gtcattggaag	1140
aatgattggc agttccact tctcagacca ctgaatgggt cagaacaact actgggtgac	1200
cctaaggtat tcttcagcag atatgtgtga aaaatggaaa gaagatgggt agaaataaac	1260
ggttttagag gaaaaaact ctcacaaaga tattataaaa agaaaagagc tttattattg	1320
agcaagcatt caaccagaat gcacaccaca ggcagtctgc taaggagtg tgcagacagg	1380
aggagtgtcg ccctttatgt gagccagtag ataaggatgc tgtgcgtgtt tttagtaact	1440
ggtcttcagc ttgacagcac catttatcac atggtttaac cttaaattcat ctggcgaatg	1500
aggctgtcac gtacttctg attagcttta tctgaaatga gacaagcttc acatgttcac	1560
ggcaggaggt aatctgctg cttagagaac aggggccatc caagccaggc tccttctccc	1620
accaacacgg gtggtgaag agctatctct ccctgggtgtg tgtgtttcag agatggctcc	1680
caggtttttg gtttggttg aattgggttt tggttttctt actctagccc agactagctt	1740
ggaattctct ggaaagctgc aacggggagc tcaggttcag tgagagatcc tgtctcaaaa	1800
agcagggtga gaagtgattg aggaagacac ccagtggtta acctctgacc tccatatgtg	1860
catgcatgga cacgcatgga tacacatata cacacacaca cacacacaca cacacacaca	1920
cacacacaca cacacacaaa accagaaaga atgaacgccc ccctcccagc ttgtttacag	1980
tagatacaga gactcgtaa aacatggggt gtaaactgaa tgctgagagt aacttagatg	2040
agtaattaag gaaggaagag gaaagaaacc aggaaccga gagcaagtga ctggaagatc	2100
gttaggcaat ctccacaccc tgctcgttga agttggaatg ctttcttctt ctgcctcttg	2160
aagttcttta gaagtgctag gatttcacaa ttagtctgtg gtggtttcaa tatgcttcac	2220
ccgtggtaag tggcactatt aggaacgtg tccttggtga aggaagggtg tcaactgcata	2280
ggcgggcttt gaggtgtctt ccagtgtctc agctcctccc agtgcaagag aggcagacac	2340

ctgttgccctg cagaagacag tctcctgctg cctttgaatc aagatgtaga actcaagccc 2400
 catgtctgcc tgaacctctg aaactgtaag ccagcccaa ttaaattgtt tctttcacia 2460
 gagttgcctt ggtcatggtg tctgttcaca gcaataaaac cctaactaag acagtcttaa 2520
 atcaatgaaa agacctttta ttattcattg aacaaacacc attttcttgt atcaagttgg 2580
 cagtgactag taagcaacta tagttctgca ccaggacact ttttgagaaa atataccgat 2640
 ccaagcatgt tggcatctag attccaaagc caagacacct gccacaccct tccatgcctt 2700
 gggttcctgg cagggcatct ggcttcgggg atgtgtattc caggcaccca ctggaatgca 2760
 tggaaacaat taaaatagca tcatagaaga cattgcaatc ctaggagaaa actataccaa 2820
 aactcagaac tatacctggt taagtgtaga aaagacgaaa ggaataaaac caggaatatt 2880
 ttaaaatatt tttattgagc tcatgtgcat ggggtattttg cctgaaagta tgtctgtgta 2940
 ccacatgcat ggctggctcc tgcagaggcc aaaagagagc atcagatctc ctagagctgg 3000
 agtttcagaa gtttgtgagc taccacatgg gtgctggaac caaaaccag gacatctgga 3060
 agagcagcca gtgtcttaa ctactgagcc atcactcagg tcccaccatg aatgtttttc 3120
 tttattcttc tctatatttt ctaattgttt tattggaaat atacaacttt tgccacacat 3180
 aacaaatgac caaagaaatg aggtgagagg ggcagctgtt caaatgctgc ctgggaaggc 3240
 ttggccagcc ctggcttggc tgcccctggc tcagctggcc ctgacttggc tgtcccgggtg 3300
 ccagctgtca tctactgctt cataataagc tgcacttttg gctgaagggg tggctcagcc 3360
 tttaaaggct aggtcataa ccaaagtaag ttgcatttta tttgcactag gttgaagggg 3420
 gatctgaaac ttgctgtcaa tgttataaaa ctttttatct tcaaatttggt tataggggtc 3480
 atagacaaaa ggttctataa accccagaac agcaccactc cctagaaata agcaccata 3540
 caagagccta tgggacactt tatagccaaa caaaaagcta tgtttgaaac ttcctttaca 3600
 agggcctgag tcccattcat aagggaagga gcccacttc gtaataacac cccactgggtg 3660
 acatttgaag gggacacatt caaactgtaa caccatctta tatcatttgc acattaggggt 3720
 caaactgtgc cacgttgta tttctaagaa gacagaagtt gtcaagcctg tgctttgagc 3780
 cacaagtgtg acaacctact ttcaggcaag tcgtacttc cctaagactc taccccaata 3840
 ggcctggggg ctggaatgtg tttaacacag atgcaggctt ctgccttagt gcaggcttga 3900
 gttctcatgt cctctctctt ttagctttcc gtctcaaggc gcctctctt agcagaaaaa 3960
 atcagaggca taaagcatac atcaggggga agccagagtt ttcagaggga gttttgtgat 4020
 ggccttttca gagcattctt gtcaagacta gtttgctctg ttctctttat taaatgaaag 4080
 aaaaataatg cagtgttgca aattagcttt ggtaatggct ccaaccattg tcaggttcac 4140
 agtctcattc cgccattcaa aacaacaaac ccaccacact ctctatgcag tgccgtaact 4200
 cagaacagcc accaaacagc agaaagaggc tccccgactc ctctcagcct tgccataaac 4260
 tcgcccggca catgcttatt ttaaattatt taaattatgt cgtttctccc aacaatgacc 4320
 tccaagtgc ttggttgaca ggcttatacc attaagccga ggcttgata gcaacgataa 4380
 ccaggtaggc tattattata accaggtagc tgccgagcta ctggtcggtc cccttttgtc 4440
 tctagaaacc tctcaacccc cacccaaaaa agcttttatt gccacttctt agtgggtaga 4500

gagcagtcag ccaatagata tttgattctt tgaggaaaaa gctgagtttt gatgtctttt	4560
aatcaagcct ttcagagtcc ctctgtgggg gaggccaggt ggaagcgggg tgggaagctg	4620
gtcccttacc taagctaata tagacaccct cccactcctc ccctgccctc ttgacagatg	4680
cagtcacctc gatcacaaatg agtattctct gaggcaggaa ggcaaggctc tgggaagatgg	4740
tcaatgcctt cattaagaac ccagagtaaa ggtcaagcag acaccagcac cgctgaaatc	4800
taatttcact gtaattgaat catctcagcc aaaggctgta ttttcagcc ctctcgtggc	4860
ctcttcccca acaactgtca acaactgtgt gagcctaccc atgtatgcgc gctcacacac	4920
acacacacac acacacacac acacacacac aggggtggggg gacacaatga ttacacaaga	4980
gtacttaata aacaactata attctcctgg ctcgatagt tccttaccac cctctcctcc	5040
tggatccgga tcctaatact ggatacaaat atttaatcca aaccaatct tgtgtctgtt	5100
aatgatcttc agtgtctcgc cctcagcaag aggacaggat attatgtttt ccctgtgatt	5160
tatgacctct tctgtctcag tatcggcagc aatttattta catggctttg gagtgtgtta	5220
tatgtgtagt atggacatga ggggtgatgt caacctatgt gtggaggcca gaggtcaatg	5280
tcattgtctc cccaatcact gccagtggt ccctggattc caaactcagg tcctcacgct	5340
tgggaactga gccagtgcc cagctcctaa cctccctg ttttaaaaag gtctcattat	5400
gttgcccagg tcagccttga acttgagagt ctctgactg caggctttca cctgtccaag	5460
tcagcaggca tcttgaacaa gaacatcatt tcctttaagc tgtttcaggc tgtgtttggt	5520
gggagctgtt aaatgcagtg cttttttcc tttggacaca ataaaagaaa aaagtgatta	5580
aatgagttgg gtgtggtggt gcgagtctac aatcctagaa ctcaggagat tgagggagaa	5640
gcattgctct gagtttgagg tcagcttaaa ttacttagta ggaacaccag gccaaattgg	5700
gctatgggat tgtctccaaa gataaagaaa aaagggaagg agagaaaaga aaaagaaagg	5760
aaagaagggg aaaagaagga atcagcagag aataaataag tcaacatgca atggccaata	5820
tactttctag gcctctaatt cttttatagt ttgtgggaaa atgtcgaaaa tcttcgttac	5880
caatttcttg ttaccaaagt tcaacgatgg ctctcctcgt ccgttaggta acctttcatt	5940
ttctcaacta ccattatgt aacgggagca ttgggtactg gatcagctt ccattaaaga	6000
tgatttttat agttgctgag cgtcgtcagg gagtctgac actgggggcg gtttaaacag	6060
atacaagcat ttaagccagt ccggagcggg gactcatccc cccccacccc ccccccccg	6120
cgagagacgc ggcgcggcca ttggtgagca tcacgccccg cccctcgccc cgctagttc	6180
ccgctgccc cgccccttc cactcccggc tccccgcgt tgtcggatca gcagaccgat	6240
tctgggcgct gcgtcgcac ggtggcagg aagcgggctg ctgaagccag gccttggcga	6300
gcactcagcc ttccgtcgtc aagctcggct cactgcgcct ctggggcct tgaggccacg	6360
gggactagga ctgggactgg gactggggct gagtctggct gggagggtgac tgtacacccc	6420
ctgctgcgcg actcctggag gaaccgaatc ccagggcagc caggccggga gccagccttt	6480
ccttcccag ccagattcac agctcagcat cgctggggat gggggtggca tcttttgact	6540
gtccttggt gttttcttct ctctttgtag tagctacagc gaacataatt ttacctcgtt	6600

attccaccac agtcattact cccttgca	gtttcattct caacgtcgcc gtgcgccttc	6660
actgcctgtg ctaggcgttt tcatgattgt	ctattttctt gtactttgaa taccgtgggt	6720
taatagcagt tgcgggtg	cgcagaattctc catttcctta agagaaactc	ctgggagaat 6780
gggactaaag acgtgcaaat ttaattatat	cgcaaacagg aatcaaaatt ttgcattaaa	6840
atgccaaaca tcttgaaaaa ttaactattc	aatgaagaaa aggaactact ttacctacac	6900
acacatccga gagcttcgag gaggcgaagg	aaatagaaaag ctaagggatg atttgggttg	6960
tatttgaaatc tgacacaagc tttccatatt	atztatagca gggactaaac gatgagtc	cat 7020
tttctgaata agatgcaaat taaagcaagt	ttgtttgttg tctttacatc tattaatatg	7080
acagagacaa tggcaacagc aaccctaacc	tagaggttgc ctgaaagtgt caggtttggg	7140
aacaagtggc cctgcttaag ggctagaaaag	attgctttac aaccaacaat catgacttga	7200
cattgcctgg ggctcctttt gtctattcct	tttttaaaag actagtgttt attttatgtg	7260
catgagtgtt ttgcatccac attcgctgtg	atacacacct ggctctgttg aggtcaggag	7320
aggggtgctgg atgcctggc actagagcct	tggatgggta tgtgagcccc tgccacaggg	7380
gagctcagaa ccaaaccag gtcctctgga	agagcaacca gagctcttaa aacttctaag	7440
tatccctcca tcccctttcc atcatatttg	gaaaggagaa aactgctacc catgcctggc	7500
atttatttca gagattaact gtctgtgtaa	aacttgacat tgaaagtgca ctattctgtt	7560
tcccatcat acttagttga gactactgta	agtcagttag ggctttttt gtttggttcc	7620
ttggttagtt tggagtgtgt ttgtgagctc	attaacaggc tttcaatatg tagctggaat	7680
ttgctgtgta gaccagacag gcctcaaat	tgtggcaatc ctccctgcat cttcccagaa	7740
tgccctggta caggcataaa ccaccgtgcc	cagcagtaaa acaatctggt gaggtattat	7800
tagtcgtgtg ctgtgacca gaaacccac	tcctggcaat ttactgggaa ggaacaaaca	7860
aagggttagg ggagccatat ggctgcagt	tagagaaaat tagatccaac tgaaaaatca	7920
acctaaaggt gtaaaagcca agcagttaag	aaactgacaa gctcatgatg gaagccagg	7980
ccatcgtgaa cactcttcat tttaggcccc	acgtatcact ggggacaact gagagtcaaa	8040
gtacaggtaa ggagaccaag gcttttcagg	actcaggctg tctcagtga aagcccagaa	8100
gagcagtaat tgaaagagct cagacgatgt	gtctgatctc ctctgtttgt ttgttgctgt	8160
attatttcca ctaacttatt tgggaggaaa	aaaaacagtt cacaggcttc ttttcttgaa	8220
atactgggga ttgctgggat cgaacccagg	gataggtttt tagttttctaa aataacatag	8280
atcatgccct gtttgctttt tggaatatgt	ttgcgtgcc ctatttttca tgttcaaata	8340
ctgctccatt ttgcgtgact ctttagtatt	ggtttgatga tttgcatatt agattagatt	8400
gtatttcagt tctcagactt atttatcaat	tctagttttc tctttttgtt gttttaaagg	8460
actcctgagt atatttcaga actgaacct	ttcaaccgag ctgaagcatt ctgccttcct	8520
agtggtaacct cgactatcag gtgaactttg	aaccaggatg gctgagcccc gccaggagtt	8580
cgaagtgatg gaagatcacg ctgggacgta	cgggttggg gacaggaaaag atcagggggg	8640
ctacaccatg caccaagacc aagaggggtga	cacggacgct ggctgaaaag ctgaagaagc	8700
aggcattgga gacaccccca gcctggaaga	cgaagctgct ggtcacgtga cccaagctcg	8760

catggtcagt aaaagcaaag acgggactgg aagcgatgac aaaaaagcca agggggctga 8820
tggtaaaacg aagatcgcca caccgcgggg agcagcccct ccaggccaga agggccaggc 8880
caacgccacc aggattccag caaaaacccc gcccgctcca aagacaccac ccagctctgg 8940
tgaacctcca aaatcagggg atcgcagcgg ctacagcagc cccggctccc caggcactcc 9000
cggcagccgc tcccgcaccc cgtcccttcc aaccccaccc acccgggagc ccaagaaggt 9060
ggcagtggtc cgtactccac ccaagtcgcc gtcttccgcc aagagccgcc tgcagacagc 9120
ccccgtgccc atgccagacc tgaagaatgt caagtccaag atcggctcca ctgagaacct 9180
gaagcaccag cggggaggcg ggaaggtgca gataattaat aagaagctgg atcttagcaa 9240
cgtccagtc aagtgtggct caaaggataa tatcaaacac gtcccgggag gcggcagtgt 9300
gcaaatagtc taaaaaccag ttgacctgag caaggtgacc tccaagtgtg gctcattagg 9360
caacatccat cataaaccag gaggtggcca ggtggaagta aaatctgaga agcttgactt 9420
caaggacaga gtccagtcga agattgggtc cctggacaat atcaccacg tccctggcgg 9480
aggaaataaa aagattgaaa ccacaaagct gaccttccgc gagaacgcca aagccaagac 9540
agaccacggg gcggagatcg tgtacaagtc gccagtgtg tctggggaca cgtctccacg 9600
gcatctcagc aatgtctcct ccaccggcag catcgacatg gtagactcgc ccagctcgc 9660
cacgctagct gacgaggtgt ctgcctccct ggccaagcag ggtttgtgat caggcccctg 9720
gggcggtcaa taattgtgga gaggagagaa tgagagagtg tggaaaaaaa agaataatg 9780
acccggcccc cgccctctgc cccagctgc tcctcgcatg tcgggaattc ggatccagat 9840
cttattaaag cagaacttgt ttattgcagc ttataatggt taaaaataaa gcaatagcat 9900
cacaaatttc aaaaataaag ctttttttct actgcattct agttgtggtt tgtccaaact 9960
catcaatgta tcttatcatg tctggtcgac 9990

<210> 16
<211> 4
<212> PRT
<213> Homo sapiens

<400> 16

Pro Gly Gly Gly
1